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EXAMINER
TIZIO, STEVEN C

ART UNIT	PAPER NUMBER
1627	

DATE MAILED: 01/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/801,157	Applicant(s) JOSEL ET AL.	
	Examiner Steven C Tizio	Art Unit 1627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-8 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 08/776,190 .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Detailed Action

Please note the change in examiner.

1. This application is a divisional of 08/776,190, which is a 371 of PCT/EP95/02915, filed on July 24, 1995.

2. Acknowledgement is made of applicants' claim for foreign priority under 35 U.S.C. 119(a)-(d) based on applications filed in Germany: P 4426276.0 filed on 07/25/1994; P 4430998.8 filed on 08/31/1994; P 4430973.2 filed on 08/31/1994; P 4439345.8 filed on 11/04/1994. However, foreign priority has not been granted on the parent application, 08/776,190. This application has the effective filing date of the parent application, PCT/EP95/02915 (July 24, 1995).

3. The election filed on August 14, 2001, has been fully considered and entered into the application.

4. The Information Disclosure Statement has been entered on December 4, 2001 and has been fully considered on December 19, 2001.

5. Applicant's election with traverse of claims 1-8 species election requirement in Paper No. 4 filed on 11/04/01 is acknowledged. The traversal is on the ground(s) that the Examiner fails to state the basis upon which the present requirement for election is being made. After reconsideration of the applicant's arguments, the species election of species A (type of conjugate); species D (what markers or indicators determine the predetermined positions that the carrier is introduced); species F (types of hapten molecule(s)); species G (types of marker groups); H (types of solid phase binding groups); and species I (what specific linkers, bonds, etc. are the means used to link each of the components units that form the conjugate(s) of the claimed invention and are any specific types of linkers used for the connectivity between specific types of units) are withdrawn.

6. Species election for species B (type of carrier), species C (means of linking monomeric units), species E (types of monomer(s) unit(s) used in the claimed process), species J (types of reactive side groups) and species K (specific types of primary amino protective groups) has been maintained in this application. The requirement is still deemed proper for these species and is therefore made FINAL.

7. The disclosure is objected to because of the following informalities: On pate 6 of the Specification, "this" should be "these" on line 5.

Appropriate correction is required.

8. Claim 6 is objected to because of the following informalities: an "and" is missing between "primary amino groups the protective groups."

Appropriate correction is required.

9. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicants' cooperation is requested in correcting any errors of which applicant may become aware in the specification.

10. Claims 1-8 have been currently pending in this application.

Claim Rejections – 35 USC § 112

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1, 2, and 8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. Claim 1 recites the **process** of producing a **conjugate** that consists of a polymeric peptidic **carrier** linked to a solid phase that can have branched monomeric units and marker groups. Claim 2 further recites the **coupling** of additional monomeric units via **reactive side groups**. Claim 8 summarizes this process. Applicants' claims are directed to conjugates that are defined in functional terms. The claims use generic terminology such as "hapten," "marker group," "solid phase binding group," "reactive side groups," and "predetermined positions." These terms are set forth in the instant disclosure but the definitions are relative, broad and/or completely open-ended.

There are an unknown number of conjugates that would fall within the claimed genus for the following reasons. Claims 1, 2, and 8 contain no structural information whatsoever on the "haptens" and "marker groups" or "solid phase binding groups." The entities in question could encompass widely varying structures.

The instant specification discloses *only* conjugates containing amino acid carriers with luminescent metal chelate marker groups and small organic molecule haptens that are attached through reactive amino groups. Applicants' claimed scope represents only an invitation to experiment regarding other possible "haptens," "marker groups," "solid phase binding groups" and "reactive side groups." The claimed scope encompasses nucleotides as the "polymeric carrier" which are also not sufficiently described in the

instant specification. Thus, the application fails to describe sufficient examples of conjugates that are within the scope of the presently claimed invention.

With respect to adequate disclosure of the scope of the presently claimed generic claims, applicant is referred to the discussion in *University of California v. Eli Lilly and Co.* (U.S. Court of Appeals Federal Circuit (CAFC) 43 USPQ2d 1398 7/22/1997 Decided July 22, 1997; No. 96-1175) regarding disclosure. For adequate disclosure, like enablement, requires *representative examples* that provide reasonable assurance to one skilled in the art that the compounds falling within the scope both possess the alleged utility and additionally demonstrate that *applicant had possession of the full scope of the claimed invention*. See *In re Riat* (CCPA 1964) 327 F2d 685, 140 USPQ 471; *In re Barr* (CCPA 1971) 444 F 2d 349, 151 USPQ 724 (for enablement) and *University of California v. Eli Lilly and Co.* cited above (for disclosure). The more unpredictable the art the greater the showing required (e.g. by "representative examples") for both enablement and adequate disclosure.

Therefore it is deemed that the disclosure is neither representative of the claimed genus nor does it represent a substantial portion of the claimed genus. Moreover, the claimed genus encompasses members, which are yet to be prepared or envisioned. This further evidences that the structural features of the exemplified conjugates do not constitute support for the claimed genus or a substantial portion thereof.

13. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a) conjugates where the polymeric carrier comprises amino acids as the monomeric units and (b) the use of a ruthenium bipyridine luminescent metal chelate marker group, does not reasonably provide enablement for (a) conjugates where the polymeric carrier comprises nucleotides or nucleotide analogues as the monomeric units or (b) marker groups other than ruthenium bipyridine. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

It is clear from applicants' specification how one might practice this invention with *specific* polymeric carriers that comprise amino acids (or modified versions thereof); however, there is insufficient guidance as to how to make/use conjugates where the polymeric carrier comprises nucleotides as the monomeric units. In addition, it is clear from the applicants' specification how one might practice this invention with a *specific* marker group that comprises a ruthenium bipyridine luminescent metal chelate; however, there is insufficient guidance as to how to make/use other marker groups that contain other metal centers and/or chelating groups. There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to:

(1) the breadth of the claims;
(2) the nature of the invention;
(3) the state of the prior art;
(4) the level of one of ordinary skill;
(5) the level of predictability in the art;
(6) the amount of direction provided by the inventor;
(7) the existence of working examples; and
(8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

See *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

(1-2) The breath of the claims and the nature of the invention: The claims are drawn to conjugates that comprise a polymeric carrier that is made up of monomer units that are amino acids (or modified versions thereof) or nucleotides. These conjugates further comprise 1-10 "hapten molecules" and 1-10 "marker groups or solid phase binding groups." These moieties are attached to the polymeric carrier via "reactive side groups" at "predetermined positions." Such represents very broad scope.

(3 and 5) The state of the prior art and the level of predictability in the art: The process of preparing conjugates that comprise peptidic backbones that have certain specific "hapten molecules" and "marker groups or solid phase binding groups" attached

thereto via "reactive side groups" are known in the art at the time of filing (see rejections below); however, only limited numbers of such conjugates were known and the specification gives no guidance to permit one of skill in the art to devise strategies for synthesis of conjugates with other types of backbones (i.e. sugar-phosphate backbone of DNA). The structures of possible variants are sufficiently diverse and one of ordinary skill would not be able to predict their structures.

The limitation that the "hapten molecules" and "marker groups or solid phase binding groups" are linked via "reactive side groups" (and specifically the "reactive amino side groups" or "reactive thiol side groups" recited in instant claims 2 and 5), adds to the unpredictability because it is unclear where such groups would be present in a conjugate comprising an oligonucleotide carrier. One of ordinary skill could not guess, *a priori*, how to make and use the claimed conjugates that comprise a polymeric carrier that is made up of monomer units that are nucleotides. Applicants' claimed scope of compound represents only an invitation to experiment regarding possible "reactive side groups" that would link "hapten molecules" and "marker groups" or "solid phase binding groups" to a sugar-phosphate backbone. In addition, one of ordinary skill could not guess, *a priori*, how to make and use other marker groups besides the ruthenium bipyridine marker groups discussed in the disclosure. There are many types of marker groups, including fluorescent, enzymatic, and radioactive compounds. Thus, the instant specification fails to identify that structure which is required for the claimed function.

(4) The level of one of ordinary skill: The level of skill would be high, most likely at the Ph.D. level. Such persons of ordinary skill in this art, given its unpredictability, would have to engage in undue (non-routine) experimentation to carry out the invention as claimed.

(6-7) The amount of direction provided by the inventor and the existence of working examples: Applicants have only provided an example of a conjugate containing an amino acid carrier (lysine derivative) with a luminescent ruthenium bipyridine metal chelate marker group and a small organic molecule hapten (which recognizes estradiol)

that are attached through reactive amino side groups. Thus, the teachings of the instant specification coupled with the examples only support conjugates comprising *specific* polymeric carriers that comprise amino acids (or modified versions thereof), utilize a luminescent ruthenium bipyridine metal chelate marker, and utilize an estradiol hapten.

(8) The quantity of experimentation needed to make or use the invention based on the content of the disclosure: In claims 1-8, there is only a broad recitation that the claimed conjugates comprise a polymeric carrier that is made up of monomer units that are amino acids (or modified versions thereof) or nucleotides. These conjugates further comprise 1-10 "hapten molecules" and 1-10 "marker groups or solid phase binding groups." These moieties are attached to the polymeric carrier via "reactive side groups" at "predetermined positions." However, the instant specification does not provide to one skilled in the art a reasonable amount of guidance with respect to the direction in which the experimentation should proceed in making and using the full scope of the claimed conjugates (i.e. when the polymeric carrier comprises nucleotides or the marker group is another compound besides ruthenium bipyridine). Note that there must be sufficient disclosure, either through illustrative examples or terminology, to teach those of ordinary skill how to make and use the invention as broadly as it is claimed. *In re Vaeck*, 947 F.2d 488, 496 & n.23, 20 USPQ2d 1438, 1445 & n.23 (Fed. Cir. 1991). Therefore, it is deemed that further research of an unpredictable nature would be necessary to make or use the invention as claimed. Thus, due to the inadequacies of the instant disclosure, one of ordinary skill would not have a reasonable expectation of success and the practice of the full scope of the invention would require undue experimentation.

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention.

A) Claims 1(step b), 2(step b), 5, and 8(step b) recite, "monomeric units covalently bound to marker groups or solid phase binding groups..." It is not clear what the applicants mean by the "solid phase binding groups" since the amino, carboxylate, or any nucleophilic groups of the monomeric units can bind to a solid support. It is unclear as to what is the structure of the binding groups and the nature of the "solid phase binding" interaction. Is the phrase "solid phase binding" meant to encompass any type of binding – covalent, non-covalent, etc? Is there a specific interaction between a solid phase binding group and a solid phase resin or are the groups merely functionalities that can bind to any solid phase? Applicants are requested to clarify.

B) Claims 1,2,and 8 (1(step b), 2(step b), and 8(step b)) recite, "introducing into the carrier at predetermined positions ..." It is not clear on what basis the applicant determines such "predetermined" positions. Depending on the number of monomeric units in the conjugate, there are many possible positions and combination of positions to add further monomeric units to the conjugate. Applicants are requested to clarify.

C) Claims 1,2, and 8 (1(step b), 2(step d) and 8(step c)) recite monomeric units consisting of "nucleotide analogues." It is not clear by what is meant by a nucleotide analogue, which can consist of multiple modifications to a nucleotide molecule, including glycosylation of the ribose ring, substituting phosphodiester linkages with thiophosphodiester bonds and using peptide bonds (peptide nucleic acids) to link the nucleotides. Applicants are requested to clarify.

D) Claims 2 (step b), 6, and 8 (step b) recite "reactive side groups." It is unclear as to what is considered a reactive side group and where such groups are located. If the monomeric units are made up of amino acids, then there are some side groups of the 20 naturally occurring amino acids that are not considered reactive (i.e. glycine, alanine). If the carrier comprises nucleotide monomers, it is further unclear about the identity and location of the reactive side groups. Applicants are requested to clarify.

E) Claims 2 (step d), 4, and 8 (step c) recite the "coupling of multiple hapten molecules" to the "reactive side groups." It is unclear as to the identity of the hapten molecules and how many are actually being coupled to the conjugate structure. Is it one type of hapten molecule, multiple types of the same hapten, or a combination of different haptens? Applicants are requested to clarify.

F) Claim 5 recites that the monomeric groups are "bound via primary amino groups or thiol groups." It is unclear as to when and how primary amino groups or thiol groups are being used for binding. If peptide bonds are linking the monomeric units together, then primary amino groups and carboxyl groups are needed to make the peptide bonds. If nucleotide analogues that contain thiol groups are used for linking the monomers, then the thiol groups would be used for binding. In addition, what types of groups, primary amino or thiol, are being used to bind the hapten molecules, marker groups and/or the solid phase binding groups to the monomeric units? Applicants are requested to clarify.

G) Claim 6 recites "protective groups" that are "selectively cleavable." It is unclear as to when and how some protective groups are cleavable and when the protective groups are uncleavable. Selection of protective groups is based on reaction conditions and the specific reactivity of the protective groups. The specification does not clearly describe such reaction conditions. Applicants are requested to clarify.

H) In claim 7, it is unclear as to what is meant by "acid-labile groups" and "acid-stable groups." Acid lability and stability varies depending on the particular protective group moiety being used. Applicants are requested to clarify.

Claim Rejections – 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by EP0155224 (Crockford, March 14, 1985) (reference #11 from the IDS provided by applicant in PTO-1449 filed on 12/4/2001).

Claims 1, 3 and 8 recites the **process** of producing a **conjugate** that consists of a polymeric peptidic **carrier** linked to a solid phase that can have branched monomeric units and marker groups. Claim 8 summarizes this process. Claims 5-7 recites the types of reactive groups used in binding marker and solid-phase binding groups (claim 5), the cleavability of the protective groups (claim 6) and the selection of a protective group based on reactivity in the production of the conjugate complex (claim 7).

Crockford discloses "a method for preparing a reagent which is useful in the determination of one component of an antibody-antigen reaction characterized by: (a) covalently linking an antibody to a solid support matrix; (b) separately forming a conjugate with a carrier molecule of said antigen and a chromagenically-responsive marker; and (c) reacting said antibody-modified solid support matrix with said conjugate" (see reference claims 15-24). The reference claims 15-24 refer to the instant claims 1, 3, and 8. The reference discloses, "said conjugate contains one or two molecules of antigen (refers to hapten of instant claims) and between about 4 and 15 molecules of marker per carrier molecule"(see reference claim 23). In this disclosure, the antibody-modified solid support matrix is the carrier (refers to instant claim 1, step a). The carrier disclosed in the reference is attached to the antibody-modified solid support matrix. Since an antibody is made up of amino acids, it satisfies the "monomer unit" requirement of the instant invention (refers to instant claims 1, step b and 3). Additionally, since the antibody is attached to the solid support matrix, the carrier contains monomeric units that are covalently bound to solid phase binding groups (refers to instant claim 1, step b). The reference antigen (hapten) is human chorionic

gonadotropin (see reference claim 24). Pages 12-16 of the reference give four examples of preparing various conjugates.

In addition, the reference discloses the role of primary amino groups in the chemical reactions (instant claims 5-6) and protecting groups were used in synthesizing the conjugates (instant claim 7); Example 2 (p.13, lines 23-26) discloses the "amino groups on the surface of the hCG molecule were extensively maleimidated with MCS." The MCS was used to protect the amino groups in the reference invention. The reference clearly anticipates the claimed invention.

18. Claims 1-4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 93/18054 (DeLeys, September 16, 1993) (reference #21 from the IDS provided by applicant in PTO-1449 filed on 12/4/2001).

DeLeys discloses in claim 1, "(a) preparing peptides corresponding to portions of the amino acid sequence of the protein or polypeptide to be analysed wherein said peptides are either contiguous or preferably overlapping by at least 3 amino acids; (b) biotinylation of said peptides; (c) binding said biotinylated peptides to a solid phase by interaction of the biot(in)ylated group and streptavidin or avidin; and (d) measuring antibodies which bind to the individual peptides." The polypeptide chain of reference claim 1(a) represents the carrier molecule. The peptides also represent the hapten groups since the antibodies of reference claim 1(d) bind to the individual peptides. The reference claim 1 refers to the instant claims 1 and 8. The instant claims 1 and 8 are interpreted as the process of producing a conjugate that has either a marker group **or** solid phase binding group attached to the carrier (*In the instant claims it is not necessary to have a marker group attached to the carrier since the instant claim 1(b) teaches that "1-10 additional monomeric units covalently bound to marker groups* ***or*** *solid phase binding groups..."*). Since the reference claims that the peptide binds to the solid phase, the requirements of the instant claim 1(b) is met. The reference in page 22 (part 7, second paragraph) further describes the process of preparing the peptide conjugates in which "the synthesis of the peptides may be achieved in solution or on a solid support" (refers to instant claims 1, step a and 8, step a). In addition, the

reference discloses in page 23 "the use of biotinylated peptides, in the process of the invention, makes the anchorage of peptides to a solid support such that it leaves their essential amino acids free to be recognized by antibodies" (refers to the "solid phase binding groups" in instant claims 1, step b and 8, step b). The reference in page 23, paragraph 3 also discloses, "the expression anchoring peptide to a solid support means the attachment of the peptide to a support via covalent bonds or non-covalent interactions such that the peptide becomes immobilized"(refers to instant claims 1, step b and 8, step b). Finally, the reference discloses the process of using an Fmoc protecting group on the peptide in claims 16-22 (refers to the use of a protective group in instant claim 7). The reference clearly anticipates the claimed invention.

19. Claims 1, 3, and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Tam (US patent # 5,229,490, July 20, 1993).

Claims 1, 3 and 8 recites the **process** of producing a **conjugate** that consists of a polymeric peptidic **carrier** linked to a solid phase that can have branched monomeric units and marker groups. Claim 8 summarizes this process. Claims 5-7 recites the types of reactive groups used in binding marker and solid-phase binding groups (claim 5), the cleavability of the protective groups (claim 6) and the selection of a protective group based on reactivity in the production of the conjugate complex (claim 7).

Tam discloses his invention in columns 4 and 5, stating that, "the invention...provides a multiple antigen peptide system comprising a dendritic polymer base with a plurality of anchoring sites covalently bound to antigenic molecules which may be the same or different. The polymers comprise a central core molecule having at least two functional groups to which molecular branches having terminal functional groups are covalently bound. The terminal functional groups on the branches are covalently bonded to antigenic molecules. The antigenic molecules are principally described herein as peptide antigens...The selected antigen may be...joined to the carrier. Alternatively, the antigen may be synthesized on the carrier." In addition, Example 1 in columns 11 and 12 teach that, "The synthesis of an octabranched matrix core with peptide antigen was carried out manually by a stepwise solid-phase procedure

on Boc-βAla-OCH_2-Pam resin ..." Example 2 in columns 12 and 13 gives a detailed "Synthesis and Purification of $(Asn\text{-}Ala\text{-}Asn\text{-}Pro)_8$-MAP(NP-16MAP)." Tam discloses a "conjugate" that is "formed on a solid phase by linking together monomeric units" (refers to instant claim 1, step a, and claim 8, step a), has definite "predetermined positions" on which to introduce additional monomeric units (refers to instant claims 1 step b, 8 step b), is covalently bound to a "solid phase" (refers to instant claim 1, steps a & b, and claim 8, steps a & b), and the conjugate of the reference meets the requirement for "comprising a maximum of 100 monomeric units selected from the group consisting of ...amino acids" (refers to instant claim 1, step b, claim 3, and claim 8, step c).

In addition, the reference discloses, "the introduction into the carrier at predetermined positions additional monomeric units comprising reactive side groups and protecting groups for said side groups" (refers to instant claim 8, step c) and "cleaving said protecting groups" (refers to instant claim 7, and claim 8, step c) in Example 1, columns 11 and 12. According to Tam, the monomeric units do not have to be just amino acids as stated in instant claim 1, step b, claim 3 and claim 8, step c. According to column 10, lines 34-39, Tam discloses, "Additionally, the core molecule could support a structure other than a polyamide, and the antigen need not necessarily be a peptide. The covalent bond which joins the antigen or other supported moiety to the carrier may be an ester, ether, urethane or some other type of covalent linkage." The instant claim 1, step b and claim 8, step c discloses, "monomeric units selected from the group consisting of nucleotides, nucleotide analogues and amino acids." Since the instant claims 1 step b and claim 8 step b teach, "1-10 additional monomeric units covalently bound to marker groups **or** solid phase binding groups," Tam clearly anticipates the claimed invention. Tam discloses in column 5, lines 5-7, "the available functional groups on the polymer are amino groups or carboxyl groups," (refers to the instant claims 5 and 6) and teaches in column 8, lines 11-14, "molecule employing different amino blocking groups, one of which is stable to acid hydrolysis, the other of which is stable to alkaline hydrolysis" (refers to the instant claim 7). The reference clearly anticipates the claimed invention.

The instant invention recites the use of marker groups conjugated to monomers. Tam discloses in column 10, lines 40-55, "The products of the invention may be employed in various diagnostic tests, including radioimmunoassay, precipitation, complement fixation, direct and indirect immunofluorescence, agglutination and enzyme linked immunoassay. For such testing the diagnostic moiety joined to the dendritic polymer may be labeled with a detectable label, or it may be caused to react with a labeled product such as a labeled antibody to product a detectable reaction product. Useful labels include fluorescent labels such as fluorescein, rhodamine or auramine...," which refers to using marker groups as recited in the instant claim 1, step b and claim 8, step b.

20. No claims are allowed.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Tizio whose telephone number is (703) 305-1903. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jyothsna Venkat, can be reached at (703) 308-2439. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Steven C. Tizio
Patent Examiner
Technology Center 1600
AU 1627

PADMASHRI PONNALURI
PRIMARY EXAMINER